#### INTERNATIONALSEARCHREPORT

International application No. PCT/JP2005/004138

## A. CLASSIFICATION OF SUBJECT MATTER

IntCL' R01L33/00

According to International Patent Classification (IPC) or to both national classification and IPC

### FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.CL7 H01L33/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Published expansed utility model applications of Japan 1922-1996
Published unremained utility model applications of Japan 1971-2005
Registered utility model specifications of Japan 1996-2005
Published registered utility model applications of Japan 1994-2005

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

JICST FILE (JOIS)

Category* Citation of document, with indication, where appropriate, of the relevant passages  Relevant to the second property of the relevant passages  Relevant to the second property of the relevant passages  Relevant to the second property of the relevant passages  Relevant to the second property of the relevant passages  Relevant to the second property of the relevant passages  Relevant to the second property of the relevant passages  Relevant to the second property of the relevant passages  Relevant to the second property of the relevant passages  Relevant to the second property of the second passages  Relevant to the second property of the second passages  Relevant to the second property of the second passages  1-8  1-8  1-8  1-8  1-8  1-8  1-8  1-	Interory 1	and the second with indication where comments	te of the relevant naccapes	Relevant to claim No.
O7. 05. 1996, Paragraph [0015][0016][0026], Figure 8  (Family: None)  Y		Citation of document, with makeanon, where appropria	a, or do roto an passage	
O7. 04. 2000, Paragraph [0098]  & US 6303405 B1  Y	Y	07.05.1996, Paragraph [0015][0016][0	1-8	
15. 01. 2004, Paragraph [0016][0021], Figure 4  (Family: None)  Further documents are listed in the continuation of Box C.  Special categories of cited documents:  A document defining the general state of the art which is not considered to be of particular relevance; the elaimed inventing active articles are relevance to the considered to be of particular relevance; the claimed inventing its cited to establish the publication date of another citation or other special reason (as specified)  Compared to the actual completion of the international filing date but later than the priority date claimed  Date of the actual completion of the international search  Date of mailing of the international search report	Y	07.04.2000, Paragraph [0098]	ectric co)	1-8
Special categories of cited documents:  A" document defining the general state of the art which is not considered to be of particular relevance articles application or patent but published on or after the international filing date.  L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified).  O" document referring to an oral disclosure, use, exhibition or other means document published prior to the international filing date but later than the priority date claimed.  Date of the actual completion of the international search.  The later document published after the international filing date inventional considered to understand the principle or theory underlying the inventional considered novel or cannot be considered novel or cannot be considered to inventive step when the document referring to an oral disclosure, use, exhibition or other means.  "I" later document published after the international filing in the international filing date and not m conflict with the application of the carning to the inventive step when the document of particular relevance; the claimed inventive step when the document of particular relevance; the claimed inventive step when the document of particular relevance; the claimed inventive step when the document of particular relevance; the claimed inventive step when the document of particular relevance; the claimed inventive step when the document of particular relevance; the claimed inventive step when the document of particular relevance; the claimed inventive step when the document of particular relevance; the claimed inventive step when the document of particular relevance; the claimed inventive step when the document of particular relevance; the claimed inventive step when the document of particular relevance; the claimed inventive step when the document of particular relevance; the claimed inventive step when the document of particular relevance; the claimed inventive step w	Y	15.01.2004, Paragraph [0016][0021],	Figure 4	7, 8
Special extegories of cited documents:  "A" document defining the general state of the art which is not considered to be of particular relevance to earlier application or patient but published on or after the international filing date and not meaning the invention of particular relevance; the claimed invention is cited to establish the publication date of another citation or other special reason (as specified)  "O" document referring to an oral disclosure, use, exhibition or other means document published prior to the international filing date but later than the priority date claimed  "Date of the actual completion of the international search  "T" later document published after the international filing date and not mean of particular relevance; the claimed to inventive step when the document is taken alone document referring to an oral disclosure, use, exhibition or other means  "P" document published prior to the international filing date but later than the priority date claimed  "Date of mailing of the international search report				<b>!</b>
is cited to establish the publication date of another cramon or other special reason (as specified)  "O" document referring to an oral disclosure, use, exhibition or other means document published prior to the international filing date but later than the priority date claimed  Date of the actual completion of the international search  "O" document of particular relevance; the claimed invent be considered to involve an inventive step when the combined with one or more other such document member of the same patent family  Date of mailing of the international search report	F Further	r documents are listed in the continuation of Box C.	See patent family annex.	
Date of the actual completion of the international search  Date of mailing of the international search report	Special "A" docum conside "E" carlier	categories of cited documents:  cat defining the general state of the art which is not  ered to be of particular relevance application or patent but published on or after the inter-  "X"	later document published after the priority date and not in conflict with understand the principle or theory un- document of particular relevance; he considered novel or carnot.	derlying the invention cam the claimed invention cam be considered to involve
Date of the contract of the co	"A" docum conside "E" earlier nations "L" docum is cites specia "O" docum	categories of cited documents:  cat defining the general state of the art which is not cred to be of particular relevance application or patent but published on or after the inter-  "X"  I filing date eart which may throw doubts on priority claim(s) or which le establish the publication date of another citation or other reason (as specified)  cant referring to an oral disclosure, use, exhibition or other	later document published after the priority date and not in conflict wit understand the priority let or theory un document of particular relevance; be considered novel or campot inventive step when the document document of particular relevance; be considered to involve an inventive and priority one of more of the priority of the pri	derlying the invention cannot considered to involve is taken alone the claimed invention cannot establish when the document when the document, so
04.04.2005 26. 4. 2005	Special "A" count conside "E" carlier national "L" docum is cite special "O" means docum than the	categories of cited documents:  cat defining the general state of the art which is not cred to be of particular relevance application or patent but published on or after the interact hit interact which may throw doubts on priority claim(s) or which I to establish the publication date of another citation or other reason (as specified) can referring to an oral disclosure, use, exhibition or other sent published prior to the international filing date but later as priority date claimed	later document published after the priority date and not in conflict we understand the principle or theory understand the principle or theory undecument of particular relevance; be considered novel or camout inventive step when the document document of particular relevance; be considered to involve an inventicembined with one or more combination being obvious to a perdocument member of the same pate.	derlying the invention came the claimed invention came to considered to involve its taken alone the claimed invention came ive step when the document other such documents, su mon skilled in the art at family
· · · · · · · · · · · · · · · · · · ·	Special "A" count conside "E" carlier national "L" docum is cite special "O" means docum than the	categories of cited documents:  cat defining the general state of the art which is not ered to be of particular relevance application or patent but published on or after the inter-  at filing date ent which may throw doubts on priority claim(s) or which to establish the publication date of another citation or other reason (as specified)  reason (as specified)  cent referring to an oral disclosure, use, exhibition or other erest published prior to the international filing date but later as priority date claimed  actual completion of the international search  Dat	later document published after the priority date and not in conflict we understand the principle or theory understand the principle or theory undecument of particular relevance; be considered novel or camout inventive step when the document document of particular relevance; be considered to involve an inventicembined with one or more combination being obvious to a perdocument member of the same pate.	derlying the invention came the claimed invention came to considered to involve its taken alone the claimed invention came ive step when the document other such documents, su mon skilled in the art at family
Name and mailing address of the ISA/JP  Authorized officer  ZK  Janan Patent Office  Saido Shingo	Special "A" count conside "E" carlier national "L" docum is cite special "O" docum docum than the	categories of cited documents:  cat defining the general state of the art which is not ered to be of particular relevance application or patent but published on or after the inter-  at filing date ent which may throw doubts on priority claim(s) or which to establish the publication date of another citation or other reason (as specified)  reason (as specified)  cent referring to an oral disclosure, use, exhibition or other erest published prior to the international filing date but later as priority date claimed  actual completion of the international search  Dat	later document published after the priority date and not meconflict with understand the principle or theory undecument of particular relevance; be considered novel or camout document of particular relevance; be considered to involve an inventive movement of particular relevance; be considered to involve an inventive movement with one or more combination being obvious to a per document member of the same page of mailing of the international same	derlying the invention came the claimed invention came to considered to involve its taken alone the claimed invention came ive step when the document other such documents, su mon skilled in the art at family

Telephone No. +81-3-3581-1101 Ext. 3255

3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan

# INTERNATIONALSEARCHREPORT

International application No. PCT/JP2005/004138

Citation of document, with indication, where appropriate, of the relevant passages	
JP 11-177133 A (ROHM CO LTD)	1-8
02.07.1999, Paragraph [0005][0021][0022], Figure 2	
(Family: None)	
·	1-8
19.07.2002, Whole document	X
(Family: None)	·
TP 0-266218 A (NTPPON STEEL CORP)	1-8
-	
	·
(a contra)	
JP 11-150296 A (TOKYO SHIBAURA ELECTRIC CO)	1-8
02.06.1999, Paragraph [0008]	
(Family: None)	
	1-8
(Family: None)	
TO 11-204887 A (TOKYO SHIBAURA ELECTRIC CO)	1-8
i .	
(1 0002)	
•	
	(Family: None)  JP 2002-203798 A (MATSUSHITA ELECTRIC IND CO LTD)  19.07.2002, Whole document (Family: None)  JP 9-266218 A (NIPPON STEEL CORP)  07.10.1997, Whole document (Family: None)  JP 11-150296 A (TOKYO SHIBAURA ELECTRIC CO)  02.06.1999, Paragraph [0008]

# PATENT COOPERATION TREATY PCT



## INTERNATIONALSEARCHREPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 7032	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.					
International application No. PCT/JP2005/004138	International filing date(day/more						
Applicant SHOWA DENKO K.K.							
This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the international Bureau.  This international search report consists of a total of3 sheets.  It is also accompanied by a copy of each prior art document cited in this report.							
1. Basis of the report  a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.    The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).							
b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.  2. Certain claims were found unsearchable (See Box II).							
2. Certain claims were tound unsearchable (See Box II).  3. Unity of invention is lacking (See Box III).							
4. With regard to the title,     The text is approved as submitted by the applicant.  The text has been established by this Authority to read as follows:							
5. With regard to the abstract,  the text is approved as submittee text has been established.	ed, according to Rule 38.2(b), by	y this Authority as it appears in Box No. IV. The applicant					
may, within one month from the date of mailing of this international search report, submit comments to this Authority.  6. With regard to the drawings,							
a. the figure of the drawings to be published with the abstract is Figure No1							
as selected by this At	opticant.  Athority, because the applicant fails  Athority, because this figure better  published with the abstract.						